

Developing Markets for Ecosystem Services



ARS Water Availability and Watershed Management Customer Workshop September 8, 2010

OFFICE OF ENVIRONMENTAL MARKETS USDA

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Preview

- ✓ The Office of Environmental Markets (OEM)
- ≠ 2010 highlights
- ✓ Issues and challenges
- ARS and OEM Linkages





The Office of Environmental Markets

• Established in response to 2008 Farm Bill, Section 2709

 Helping to build unified, transparent markets for ecosystem services where landowners can participate and buyers can trust that they're purchasing a real conservation benefit.

In other words...



...making markets work for conservation



Markets for Ecosystem Services

- Place economic value on natural assets currently "outside" the market place
 - · Carbon, water, wetlands, biodiversity
- Compensate producers of environmental public goods and services

"The degradation of ecosystem services represents loss of a capital asset."

Millennium Ecosystem Assessment









2008Farm Bill: Section 2709

Science-based methods to measure environmental services benefits from conservation

METRICS

Protocol to report environmental services benefits

Registry to collect, record, and maintain benefits measured

Process to verify benefits registered

MARKET INFRASTRUCTURE

Use of existing information: Build on existing activities or information

Consultation: Consult with Federal and State government agencies and nongovernmental interests including farm, ranch and forestry producers; financial institutions involved in environmental services trading; academic institutions; NGO's; and private sector representatives

So how are we doing this?



Chesapeake Bay Environmental Markets Team

- Led by OEM in response to EO 13508
- Includes regulating agencies and those encouraging voluntary conservation:
 - USDA, EPA, CEQ, OMB, DOC, DOI, DOT, DOD, USACE, DHS, Navy
- Facilitates Federal Government collaboration on market infrastructure:
 - Tools to measure the effects of conservation practices
 - Reporting and verification protocols to ensure measurable environmental improvements
 - Transparent registry and trading platform with oversight
 - Piloting, outreach, and evaluation
- Present priority is water quality supporting EPA and state processes related to the Chesapeake Bay TMDL



Nutrient Trading Tool (NTT)

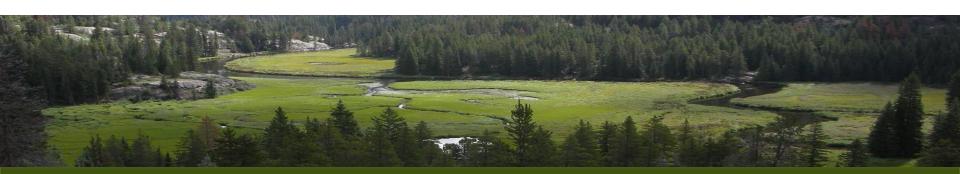
- NRCS/ARS/EPA online tool
- Combines APEX with user-friendly web interface
- Calculates Δ in on-farm N, P, sediment, NO2, C, and crop yield from a variety of agricultural practices
- EPA involvement helps validate NTT for regulatory markets
- Prototype will be integrated with COMET-VR API and calibrated down to the county level
- WRI is integrating NTT with its Nutrient Net Tool and the EPA Bay Watershed Model





Water Quality Trading Guidelines Development

- OEM has engaged University of Maryland, Mid-Atlantic Water Program Partner, to develop technical guidelines for how to define and measure the effects of conservation BMPs in a market
- Project includes listening sessions in existing markets and an analysis of implications for new markets
- Work complements CEAP research





Ohio River and Upper Mississippi River Basins

- USDA, EPA, and Electric Power Research Institute MOU to advance ecosystem services research and management through:
 - Coordinated and collaborative research efforts
 - Analysis of barriers to sustainable ecosystem service management
 - Demonstration projects
- Proposed program of work includes:
 - Online database of existing research and tools
 - Evaluation of existing materials and development of research plan to address gaps in knowledge
 - Development of ecosystem indicators, measurement protocols, baseline assessments and further assessments



Farm of the Future

- Suite of case studies
- Illustrates how select landowners are participating successfully in environmental markets
- Demonstrates challenges and opportunities for farmers, foresters, and ranchers throughout the country

BIODIVERSITY CREDITS

Conservation organizations are leasing development rights from the owners of undisturbed forests and other habitats that host threatened endemic species and fast-vanishing ecosystems.



CO, OFFSET CREDITS

When landowners plant new forests and promise never to cut or burn the trees, they can receive carbon dioxide offset credits that industries will buy to help them comply with restrictions on greenhouse gas emissions.

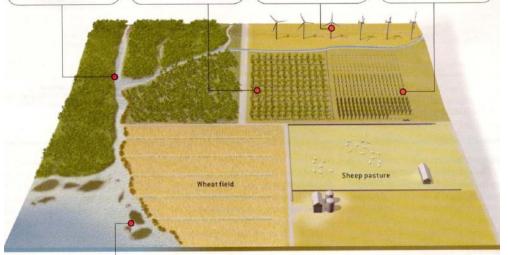


Wind farms generate nonpolluting electricity that commands premium prices in deregulated power markets. The turbines can also garner tax credits that subsidize their capital and operating costs.

CERTIFIED SUSTAINABLE TIMBER

Sustainably harvested timber is now one of numerous "eco-labeled" products that are certified as ecologically sound and sold at a premium in specialty markets.





WATER CREDITS

Careful management of water and wetlands is economically valuable for many reasons. Urban water authorities purchase water filtration credits to protect the quality of their watersheds; wetland owners can also receive compensation from government agencies for flood-control services, from conservation organizations for the preservation of migratory waterfowl breeding areas, and from paricultural congenitives for

for flood-control services, from conservation organizations for the preservation of migratory waterfowl breeding areas, and from agricultural cooperatives for the prevention of soil salinity increases caused by overdrawn groundwater aquifers.

| COMMODITY | PERCENT OF FARM'S INCOME | CUSTOMER |
|------------------------------------|--------------------------|--------------------|
| Biodiversity credits | 5 | Conservation trust |
| CO ₂ offset credits | 10 | Steelmaker |
| Renewable electricity | 15 | Power market |
| Certified sustainable timber | 50 | Specialty market |
| Water credits | 20 | Urban water market |
| Wheat | 15 | World market |
| Wool | 15 | World market |



Challenges for Environmental Markets

- Promising approach requiring significant support and on-the-ground proof of concept
- Markets affected by policies and programs across the government
- Scale | Cost | Risk
- Scientific credibility is key to market success e.g., inter-scalar model/data integration
- Institutional arrangements



Linkages between ARS Research and OEM Projects

- Chesapeake Bay Environmental Markets Team Tools to measure the effects of conservation practices
- Nutrient Trading Tool Data informing APEX inputs and methodologies
- Water Quality Trading Guidelines Development –
 Synergy with CEAP
- Ohio and Upper Mississippi River Basins Researchbased goals



Thank you



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